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ABSTRACT

Initiatives to improve vocational education--such as tech prep, the School-to-Work Opportunities Act (STWOA), and Goals 2000: Educate America Act--are full of promise. Case studies prepared by the Vocational Industrial Clubs of America illustrate the potential of these initiatives. Massachusetts and Wisconsin are two recipients of federal STWOA implementation grants. Maryland and Pennsylvania have strong programs in tech prep and apprenticeship. Oklahoma's Craftsmanship 2000 (C-2000) program has become a model school to work transition program. STWOA is divided into three main parts: school-based learning, work-based learning, and connecting activities. What education reform means for Massachusetts is more funding to design new programs. Administration, faculty, and students at Tri-County Regional Vocational Technical High School are designing a tech prep program. In Maryland, state tech prep grants are allowing schools such as the Carroll County Career and Technology Center to design their own plans. At Lebanon County Career and Technology Center, Pennsylvania, a pilot school-to-work transition program includes academic teachers, employers, and college scholarship funds. A pilot youth apprenticeship program at L.P. Goodrich High School in Fond du Lac, Wisconsin, falls under STWOA. The C-2000 machining program at the South East Campus of Tulsa Technology Center, Oklahoma, is a model for programs that receive grant money under STWOA. (YLB)

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ED 379 432

SCHOOL *to* WORK

School-to-Work Transition: Local Programs

A Series of Case Studies by the Vocational Industrial Clubs of America

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"VICA's mission is to help its student members become world-class workers and responsible American citizens."

Vocational students are our business. Whatever or whom ever affects the quality of their education and training is our concern. This includes their instructors, their present and future employers, and the policies which affect all three in addressing our mission.

VICA is an unwavering advocate of setting and meeting high academic and occupational standards. Such standards are in the best interest of business and labor, education, and most of all students.

Federal education and training policy is among our top concerns. Initiatives to improve education including tech-prep, the School-to-Work Opportunities Act, and The Goals 2000: Educate America Act are full of promise.

Because these programs are new, VICA has chosen to conduct a continuing study of their implementation at the state and local levels. Our aim is to share current, practical information on how implementation is going forward. Specifically, we are concentrating on reform at the local level. After all, it's in the school or work site where the "rubber hits the road." Through case studies such as the following, VICA will highlight: what is working for schools, employers, teachers and students; where there are problems and how local programs have solved them.

Case Study Summary

For this first edition of our paper, VICA selected five states and local programs as case studies. Massachusetts and Wisconsin are two of the eight recipients of federal School-to-Work Opportunity Act implementation grants. Maryland and Pennsylvania each have strong programs in tech-prep and apprenticeship, and Oklahoma's Craftsmanship 2000 program has been a model school to work transition program used nationwide.

Each local program is different depending on the resources they began with (existing employer support, existing tech-prep or apprenticeship programs), and the biggest challenges to be overcome first. What each have in common is integration of academic and occupational training, securing employer participation and support, teacher training, and creating articulation agreements with postsecondary institutions.

Following is a list of highlights from each state and program.

Massachusetts

Tri-County Regional Vocational Technical High School, Metro-West Tech-Prep Consortium

- **Employer support**: built upon an existing program closely resembling cooperative education with Texas Instruments for automating equipment. Texas Instruments had "developed an elaborate in-house training program—216 hours of classroom instruction that cost $15,000 per person." When production tripled but its employee pool was exhausted "it turned to local vo-tech schools."
- **Components:** their school-to-work program includes aspects of tech-prep, co-op, academics, and apprenticeship.
- **Time for implementation:** the tech-prep program has been running for two years. Estimate five to seven years before the program is fully integrated in vocational schools, colleges, and comprehensive high schools.
- **Articulation agreements:** have been a difficulty. Currently there are 67 different agreements between high schools and colleges. Public colleges could be more responsive.
- **Standardization:** needs improvement, specifically in courses such as Principles of Technology where student attainment can vary from school to school.
- **Employability skills:** are part of the grading process. Students in vo-

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cational student organizations such has VICA have an advantage.

Maryland

Carroll County Career and Technology Center; North Carroll High School

- **Student focus:** opens experiences to students who are not vocational students because" we have a good system for those who are."
- **Guidance opportunity:** an area for improvement is to be sure students who are encouraged into trades know what is expected in the field. Students also need initial training and screening before being sent to the job site.
- **Articulation agreements:** four-module day structure allows students to take community college courses for credit while still in high school and to sign up for intern programs. "With this four-module program, grade point averages have gone up."
- **Employability skills:** are part of the grading system.

Pennsylvania

Lebanon County Career and Technology Center

- **Faculty:** English, math, and history/social studies instructors have been hired to work at the vo-tech center. Also, employers are being trained so they know what to do with students on site. However, "if we are going to carry this on to any degree we will need additional personnel."
- **Scholarship:** students earn college placement and are paid $5 per hour. Employers put 50 cents on the dollar into a scholarship fund for each student, or into a general pool.

Wisconsin

L.P. Goodrich High School

- **Components:** New youth apprenticeship program which falls under school-to-work. Program resembles tech-prep, vocational education, and youth apprenticeship combined.
- **Standardization:** industry partnership has meant standardized curriculum. "Now I'm responsible to local industry," says an instructor ". . .and this will be the first time in the state of Wisconsin that machining will have a unified curriculum available statewide."
- **Community support:** STWOA has generated more community support than tech-prep because apprenticeship forces the instructor into the community.
- **Curriculum:** is being revamped entirely. The program involves applied academics and curriculum designers are working on a chemistry of materials course.
- **Student teamwork:** VICA is used as way for the class to learn teamwork and to gain visibility for their program.

Oklahoma

Craftsmanship 2000 South East Campus, Tulsa Technology Center and Tulsa Junior College.

- **Business support:** Craftsmanship 2000 (C-2000) was created by industry. "It was industry driven, industry sponsored, and industry coordinated." The school was approached through the Tulsa Chamber of Commerce and an umbrella organization called Career Partners Inc.
- **Components:** C-2000 is called apprenticeship training but resembles tech prep because it includes applied learning in math, physics, communications and computer literacy.
- **Articulation:** agreements with Tulsa Junior College.
- **Time in program:** C-2000 has been running for three years. The student commitment requires three to four years in the program, eight hours per day, five days per week.
- **Faculty training:** academic teachers are involved including plant tours. Industry mentors also receive training on how to be teachers.

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• **Employability skills:** are taught through the *VICA Professional Development Program* curriculum.

VICA and Federal Policy: Carl D. Perkins Act of 1990 (P.L. 101-392)

The Carl. D. Perkins Vocational And Applied Technology Education Act of 1990 provides federal assistance for five years from July 1, 1991 through June 30, 1996. Overall authorization is for $1.6 billion per year in support of secondary, postsecondary and adult vocational education programs. The Perkins Act is up for reauthorization during the 104th Congress in 1995.

The stated purpose of the act was to condense "from nine stated objectives in the former act to only one, with an economic mission. . .'it is the purpose of this Act to make the United States more competitive in the world economy by developing more fully the academic and occupational skill of all segments of the population. This purpose will principally be achieved through concentrating resources on improving educational programs leading to academic, occupational, training, and retraining skill competencies needed to work in a technologically advanced society.'"

Major features in the legislation include: increased emphasis on services for "special populations" (including the poor, handicapped, disabled, single parents, those with limited English proficiency or not properly served due to sex bias); increased funding for localities; decreased funding for state administration; and tech-prep education.

Tech Prep

The Tech-prep Education Program is intended to lead from two years of vocational education at the high school level to two more years at the two-year college level. Perkins provides planning and demonstration grants for consortia of local education agencies and postsecondary institutions create a system where graduates would receive two-year associate degrees or two-year certificates.

VSOs

Vocational Student Organizations (VSOs) such as VICA, are cited in the legislation as authorized activities under state programs "especially with respect to efforts to increase minority participation in such organizations;" as eligible for membership on state councils of vocational education; as a subject of study for the National Assessment of Vocational Education (NAVE); and eligible for membership on the Vocational Education Advisory Task Force.

The act defined VSOs as "those organizations for individuals enrolled in vocational education programs which engage in activities as an integral part of the instructional program. Such organizations may have state and national units which aggregate the work and purposes of instruction in vocational education at the local level."

NAVE

The National Assessment of Vocational Education (NAVE) funded under Perkins, published a five volume study of the legislation and made recommendations for the next reauthorization. Under the section "Conclusion and Future Directions" the NAVE makes these summarizing statements:

"The second wave of the education reform movements has performed an invaluable service in calling the nation's attention to the educational needs of the non-college-bound students. . .these students are the most serious problem in secondary education. . .

"The 1990 Perkins Act attempted to remedy some of these shortcomings by setting a reform agenda for vocational education—the development and implementation of perfor-

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mance standards, integration, and tech prep. . .

"The next Perkins Act (together with other related federal education legislation) should expand its reform agenda to restructuring education for non-college-bound students in order to effectively prepare them for work. . . it should rely more on states to develop restructuring plans, and within such frameworks, to give local reform efforts greater coherence and direction. It should also rely more on the federal government to help develop resources to facilitate reform, such as industry skill standards, occupational competency tests, and curricular materials."

The NAVE findings on vocational student organizations stated: "In general, VSOs appear to be fair, equitable organizations dedicated to improving the leadership and skills of vocational students and the quality of the technical workforce. Across all secondary schools, minority students are represented in VSOs in proportion to their numbers." In its summary recommendations, the NAVE stated "Congress should permit or encourage states to allocate modest amounts of basic grant money to defray the costs of VSO participation. . . for low income students and to increase the recruitment of minority students to VSOs."

Policy Statement of the U.S. Department of Education

Vocational student organizations have been endorsed through the years by the U.S. Department of Education. The most recent statement signed by Secretary of Education Richard W. Riley and Assistant Secretary for Vocational and Adult Education Augusta Souza Kappner states in part: "Recognizing that the past performance and future potential of these 10 organizations are compatible with the overall purposes and objectives of education today, the U. S. Department of Education strongly endorses their objectives and seeks to involve their thinking in the improvement of vocational-technical education."

The statement highlights "the concept of total student development as being necessary for all vocational-technical education students to assume successful roles in society and to enter the labor market," and the U.S. Department of Education "approves of Federal and State grant funds for vocational-technical education to be used by the states to give leadership and support to these vocational student organizations and activities. . ."

The School-to-Work Opportunities Act of 1994 (P.L 103-239)

The School-to-Work Opportunities Act of 1994 (STWOA) attempts major reform of American public education, particularly at the high school level. STWOA programs are meant to be attractive to all students and provide them with clear pathways to careers and further education. The STWOA seeks to eliminate barriers in education which have "tracked" students rather than taking all students to high academic and occupational standards. In designing and implementing school-to-work, Congress looks to initiatives such as tech-prep, career academies, youth apprenticeships, cooperative education, and business-education compacts.

The STWOA encourages state and local education to form partnerships with business and labor. By making the private sector partners in education, reformers seek to integrate vocational and academic courses, teach "all aspects of industry," and integrate work-based and school-based learning. The STWOA is tied to The Goals 2000: Educate America Act particularly in the academic and occupational standards established by the boards under Goals 2000.

The STWOA draws upon both the

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U.S. Department of Labor and the U.S. Department of Education and will be administered by a separate STWOA office. Funding for STWOA is modest by federal standards. Congress approved $100 million in Fiscal Year 94 for planning and implementation grants to the states. Funding in Fiscal Year 95 is likely to be around $240 million. Federal funding for STWOA will come to a close after five years. The intent of the legislation is to start the system, but from that point on states and localities are responsible for school-to-work programs.

The Act is divided into three main parts: school-based learning; work-based learning; and connecting activities including the following areas of emphasis:

- **The school-based section** concentrates on career exploration and counseling, initial selection of a career major, and integration of academic and vocational education.
- **Work-based learning** includes a coherent sequence of job training and work experiences coordinated with the school-based component, workplace mentoring, and general workplace competencies such as positive work attitudes, employability skills, and participative skills.
- **Connecting activities** include coordination of work-based learning between students and employers; technical assistance for partnership members in designing work-based learning components; training for teachers, workplace mentors, counselors; assistance to schools and employers to integrate academic and vocational education; and linking youth development activities with employer and industry strategies for upgrading the skills of workers.

Vocational student organizations—and the work they do—are cited in the legislation. Specifically, vocational student organizations are eligible for membership on local partnerships, and state agencies are required to describe "the manner in which the State has obtained and will continue to obtain the active and continued participation, in the planning and development of the statewide School-to-Work Opportunities system, of. . .vocational student organizations. . ."

Also directly related to the work of VSOs is the mandatory activity under the work-based learning component that the STWOA program include "instruction in general workplace competencies, including instruction and activities related to developing positive work attitudes, and employability and participative skills." These are the very areas developed by vocational student organizations as recognized in the Perkins legislation and the U.S. Department of Education Policy statement.

Case Studies

When it comes to the school-to-work transition movement, programs differ not only from state to state but from district to district, from school to school, and even from trade to trade within a school.

Education reform has states and localities scrambling to redesign their programs. The funding tied to education reforms has generated enthusiasm for change and cooperation among the general, business, academic and vocational-technical tracks.

This reform is a painstaking process that's frequently confusing but generally embraced by the key players who know how badly it's needed.

Massachusetts

What education reform means for Massachusetts is more funding to design new programs.

Since 1991, in conjunction with the reauthorization of the Carl Perkins Act, the administration, faculty and students at Tri-County Regional Vocational Technical High School in Franklin, Mass., have been going through the tedious process of designing a

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"We are continuously upgrading the sophistication of our manufacturing equipment, and there's a large portion of our existing employee population that can't keep up with it. Heaven forbid that we've got to dumb down our manufacturing technologies, when the rest of the world is going the other way."

tech-prep program and establishing themselves within the Metro-West Tech-Prep Consortium, one of 11 in the commonwealth.

With the tech-prep transition in full swing, Massachusetts is now dealing with more changes. One of eight states to receive funding through the federal School-to-Work Opportunities Act passed last May, Massachusetts received a $27.5 million grant—$5.5 million annually for five years. In addition to getting the school-to-work funds, the commonwealth received a $330,000 planning grant from the federal government to create school-to-work implementation designs. Tri-County is in one of the design areas.

According to Karen Ward, education specialist with Massachusetts' school-to-employment services unit, the school-to-work funding will be used to connect state and local programs and curriculum. School-to-work transition will become an umbrella program for tech prep, cooperative education and apprenticeship training.

"Every school district will be required to have a consortium of local partners, secondary schools, postsecondary schools, businesses, labor organizations and community-based organizations," Ward says. "So every high school is responsible to write a work force development plan.

"With the $27.5 million, Massachusetts will fund school districts with school-to-work opportunities grants in addition to the federal planning grants."

With or without the funding, school-to-work transition has been an issue at Tri-County for some time.

Gilbert Fletcher, an engineering supervisor for Texas Instruments in Attleboro, Mass., contacted the school when he faced an employee shortage.

In the mid-1980s, Texas Instruments developed automating equipment. For the first few years, the company hand picked the best local people to run the new equipment but found the talent supply quickly tapped out. So it developed an elaborate in-house training program—216 hours of classroom instruction that cost the company $15,000 per person. With production tripled but its employee pool exhausted, it turned to local vo-tech schools.

"We came upon Jack Jones, who was then principal at Tri-County," Fletcher remembers. "He knew intuitively what we needed. He said, 'Why don't we develop a program, call it industrial technology, and we'll aim at exactly the skill set that you're looking for.'"

Texas Instruments provided funding and equipment, and the program was developed. Students and instructors went on tours of the Texas Instruments facility, and the promising students were brought in for preliminary training. The best became involved in the new program, which closely resembled cooperative education.

The company started gaining two new employees a year, on average, at a fraction of the cost of doing its own training, and the school found a way to get its students into industry to test a career choice.

Therefore, long before the School-to-Work money came to Massachusetts, Tri-County was meeting a need for school-to-work transition. The school was building a framework for programs that gave students work-based learning, school-based learning with advanced college placement, and an opportunity to earn money.

One of the first students to reap benefits from both the Texas Instruments and tech-prep programs was Paul Renaghan, now a senior at Tri-County. Through the Texas Instruments industrial technology program last year, Renaghan trained on the company's equipment at the school. He also trained at the facility for one

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"We must be able to make some assumptions about what principles of technology students are exposed to, so that when an employer sees that a student had Principles of Technology I and II in high school, he knows the student can function at a certain level."

week in the spring and another in the fall. Later he was hired for full-time summer employment, and he returned this year as a co-op student through the school's metal fabrication course.

As part of this tech-prep program, Renaghan attends Northeastern University on Saturday mornings, earning credits in Engineering Design I and II and precalculus.

"There is such a need for this type of program for American industry," Fletcher says. "It's almost desperation.

"We are continuously upgrading the sophistication of our manufacturing equipment, and there's a large portion of our existing employee population that can't keep up with it. Heaven forbid that we've got to dumb down our manufacturing technologies, when the rest of the world is going the other way."

Like everyone involved in the school-to-work transitions at Tri-County, Joe Beasley, director of the Metro-West Tech Prep Consortium, sees education reforms strengthening programs and ultimately helping students meet the needs of companies like Texas Instruments.

"I think tech prep will play a vital role in the foundations of school-to-work programs," he says.

"School-to-work includes the statutes of tech-prep, tech prep being the strongest proponent. If we look at the school-to-work program, we have tech-prep, co-op, academics and apprenticeship. We're not going to try and marry tech-prep and co-op. But we are at least trying to put them in the same room together."

Massachusetts education reform leaders and the staff at Tri-County know what they're up against in first defining programs, then designing and shifting programs and program thinking.

"We approached it here in this consortium by not talking about curriculum reform or curriculum development, but by talking about curriculum matching . . . the curriculum from the secondary schools to the postsecondary schools," Beasley says. "We did it by subject matter, following national standards for principles of technology."

Change takes time. At this point, the tech-prep program has been up and running for two years. According to Beasley, it will take five to seven years before the program is fully integrated into vocational schools, colleges and comprehensive high schools.

One of the difficulties has been establishing articulation agreements with community colleges.

"In terms of articulation, we currently have 67 different agreements between the high schools and colleges," Beasley explains. "My observation is that the public colleges need to be more responsive to articulation.

"In some cases, they've come and looked at our curriculum and found that their programs were not as strong. They get cold feet, and they back away from making agreements. I don't think they've realized that tech-prep could possibly be their biggest recruiting sources."

Tri-County is also working on staffing the tech-prep program. The Metro-West Consortium is conducting workshops to help existing staff make the transition.

John Kowalcyk, the school's principles of technology instructor, says the shift has been slight and relatively painless: "It hasn't been difficult at all. The program is very well organized and the curriculum is laid out for you."

Kowalczyk, who has worked on a curriculum matching team, adds, "Science teachers have talked about how we could hold accountability to these programs . . . using standardized testing. The colleges are very concerned. They don't know what an A student in my physics class has learned.

"Right now we're looking at serious discrepancies from one school to

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"A lot of our problems with enrollment are because the people who are supposed to encourage students to go into the trades don't know what's going on in the field or here at the tech center."

another in principles of technology. We're teaching PT here on a five-classes-per-week basis; half the schools are doing two classes per week.

"We must be able to make some assumptions about what principles of technology students are exposed to, so that when an employer sees that a student had Principles of Technology I and II in high school, he knows the student can function at a certain level."

In this principles of technology program, competencies are critical. So, too, are employability skills or workplace basics—so critical, in fact, that they have become part of the overall grading process for all courses at Tri-County.

According to Beasley, students who are in vocational student organizations such as VICA have an advantage in these areas.

"VICA has a large role at Tri-County. We have over 90 students involved, and I think the VICA students are good examples for the others. They're always here, they complete projects, they're very deft students. I think it's the work ethic they learn through VICA."

Maryland

While Maryland has not received federal School to Work Opportunities Act funds, state tech-prep grants are allowing schools such as the **Carroll County Career and Technology Center in Westminster, Md.**, to design their own plans.

The center serves five feeder schools, and its students are in traditional vocational-technical programs, cooperative education programs and tech-prep programs. Longtime teachers and school staff have established solid working relationships with local industry in this rural community. By drawing on this experience, the center is piloting new programs that open-minded administrators and faculty have readily accepted.

The center has a school-to-work transition program plan known as Pathways to Careers, according to Judy Loar, assistant supervisor for the Career and Technology Education, the county school system has a school-to-work transition program plan known as Pathways to Careers.

"Part of the plan includes opening up some experiences to students who are not vocational students, because we have a good system for those who are," Loar says.

"We'll probably be using a lot of the same things that we have been doing in co-op, but we're still working on how we'll put that in place.

"We already have principles of technology at Westminster High School. It's being team taught by tech-ed teachers and physics teachers. There is an applied math course in the works for next year."

Pathways to Careers will not replace the cooperative education. Gene Dolly, the center's co-op work coordinator, has a solid program in place. It not only puts students on the job, but has employability training built into the grading system.

"If students meet the requirements, they take their required subjects in the morning, but whenever their subjects are over, they go to the job instead of coming to the center," Dolly says.

"I go to make my visits and keep records. Being here as long as I have, I have a list as long as your arm of employers."

This year, in addition to his co-op position, Dolly is teaching brick masonry part time. Dolly worked in the trade for 22 years before going into teaching and after more years as a masonry instructor, he became the co-op coordinator.

With the new program changes, Dolly is concerned that students may not have initial "basic training" or screening before they go to a work site. He feels the center should have a role in making sure students have

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"Last year, 37 percent of the students in Maryland going to college were going to community college."

the minimal physical or mental propensity to be in the fields they've chosen.

"I can tell by watching them whether they have the innate potential to be able to manipulate a trowel. A lot of our problems with enrollment are because the people who are supposed to encourage students to go into the trades don't know what's going on in the field or here at the tech center," says Dolly.

That's been a consideration in program design according to Loar.

"What I could see happening is that we'll do more clustering so that the students in construction trades get some masonry, electricity, carpentry . . . so the instructor can tell if the student has the gift to do one trade but not another," says Loar. "I would not want to see instructors not teaching any of those skills. I really feel that school is the best place for them to be learning the basics."

The center's craft committees and teachers from all disciplines are being pulled into the program planning to consider all facets of the school-to-work program planning, from course matching to work-site learning experiences. Part of the pilot program design includes tours and job shadowing experiences for traditionally academic teachers.

Loar says, this type of communication and the program changes at the tech center will not only strengthen programs and give more students more options, but ultimately improve the image of vocational-technical education.

"I think because it's being integrated with Goals 2000, it's bringing us more into the mainstream with the emphasis being on *all* students," she adds. Loar hopes this will eliminate some of the problems with the type of students who come to the tech centers.

"Tech centers are still the major way that most of the school programs are developed across the United States. We have not had the best reputation about the kinds of students we get," Loar explains.

"We're taking a look at are students who have been regular academic students, [and] who decide in their senior years that they want to be architects, but they've had no traditional drafting classes. We're making arrangements so that they can come into the drafting class at the tech center for a short period of time.

"They wouldn't be regular students, but would become part of what this building is all about. I think this kind of thing will change the image of the type of student electing to come here."

Besides changing the image, tech-prep programs have garnered interest in articulation programs.

"Last year, 37 percent of the students in Maryland going to college were going to community college," explains Loar. "The result is, the Maryland Higher Education Commission began looking closely at this and articulation between high schools and community colleges and four year colleges."

The Pathways program has helped establish articulation because it spells out what's required. Right now the center has several agreements with local colleges.

One of the simplest agreements was with **North Carroll High School in Hampstead, Md.** The site of a new tech-prep to pilot program, its four-module day structure has been conducive to community college articulation.

A comprehensive high school, North Carroll's Pathways program will look like a tech-prep program extending itself into school-to-work. Richard Weaver, who is leading the project at North Carroll, says it's a work-based learning program that falls into three categories:

• Seniors who elect to take courses at the community college for credit,

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"VSOs will be the enrichment part of this. Kids learn a lot from VSOs. They pick up as much as they do in the classroom, probably more."

while being enrolled in the high school.

- Students who go out on work release programs who will now be monitored more closely by the school.
- Students who sign up for intern programs in more professional career areas.

Students can earn eight credits a year. They only need 20 to 21 credits to graduation. So students who meet the required 20 or 21 by their senior year, can elect one of the above options. The pilot is still in its organizational stages and students will be involved in it by February 1, 1995.

"The exciting part of this is that I see students all the time, and I ask them, 'What do you intend to do when you get out of school?'" Weaver says. "A lot of them have no idea, or they have a misconception of what the job is. This will give them a chance to find out.

"The program is not limited to any one level of students. It's top academic to the lowest-functioning, general-track student."

Students who meet their requirements early can take college courses for credit and explore their career options. Students on work release will no longer be in un-monitored situations. And, the internships will allow students to get a feel for their careers during either nine-or 18-week sessions.

"We're not looking at putting kids at the local fast-food restaurant as part of this program. There's been some concern that this will take students away from taking some other higher level courses here," says Loar. "But we're not saying that everybody has to do this. This is the student's choice."

"We've had good administration support. We have a principal with a lot of vision. With this four-module program, grade point averages have gone up," says Weaver. "Students seem happier with only four classes at a time to concentrate on.

"This is just a step in the process of moving this school from a subject-based program to an outcome based/tech prep program."

As the programs are designed Weaver sees a direct connection with vocational student organizations in giving students employability skills.

"If VSOs can get built into the school-to-work transition movement, now at the beginning, and kids become aware of them, we can tie them into this. VSOs will be the enrichment part of this. Kids learn a lot from VSOs. They pick up as much as they do in the classroom, probably more."

Roland Phelps, the school system's tech-prep coordinator, taught technology education and industrial arts for 20 years.

"Many times these were the students who really didn't have any direction and no specific skill training," Phelps says. "What I saw, and what this whole movement has pointed out, is that these kids will pick up a course on their own, and they'll float back and forth between meaningless types of employment. No career goals are set."

To Phelps, the tech prep/school-to-work movement is just what education has needed.

Pennsylvania

At **Lebanon County Career and Technology Center in Lebanon, Pa.,** apprenticeship training is now called school-to-work transition. A pilot program here includes academic teachers, employers and college scholarship funds.

Dean Ruch, program coordinator for the metal manufacturing program, says the program is no longer strictly vocational training. They've hired English, math and history/social studies instructors to teach at the traditionally vo-tech center.

Curriculum is project-based and requires academic integration. By adding these disciplines, students get the

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"I need to ensure that the academic teachers understand machining to make the studies relevant."

whole scope of what their trade involves on a project basis. Besides the metals and machining aspects, students now get into development and design.

Faculty has changed, curriculum has changed and now employers are trained to ensure that they know what to do with the students once they're on site. If the student has problems, whether they're trade or employability related, the academic as well as T&I instructors at the center solve the problems.

"Employers need to know what the requirements are," says Ruch. "If the student could not figure out trigonometry and the employer did not have the time to spend training, then I would bring the problem to my math instructor and he would remediate. And, as the coordinator, I need to ensure that the academic teachers understand machining to make the studies relevant."

Local support for the program is good. According to School Director Stephen Kachniasz, support for the machining program has increased since employers have worked with students and know they are getting quality training.

Students in the pilot do earn advanced college placement through the program. They also get paid $5 an hour, and employers have agreed to put 50 cents on the dollar into a scholarship fund for each student. If a student doesn't use the fund, his or her money goes into a general scholarship pool. Ruch hopes the incentive may encourage students to try courses at the local community college.

The program is good. The community supports it, but to meet national standards, it's going to take commitment and dollars according to Kachniasz.

"If we are going to carry this on to any degree, we will need additional personnel," he says. "We may be making progress with this metals program, but if we are to expand this and do quality programs in other areas, we are going to need financial support."

Wisconsin

As Congress was working to pass legislation to create a nationwide school-to-work transition system, Wisconsin was busy designing programs that included the federal design guidelines. So when Wisconsin was one of the eight states to receive funds from the School to Work Opportunities Act (STWOA)—$4.5 million in May 1994—program transition was already in the works.

The logical place to begin was in Wisconsin's apprenticeship training programs. Youth apprenticeship has a specific legal meaning in the state. It refers to the program authorized by the state legislature and administered by the Department of Industry, Labor and Human Relations (DILHR), the agency in charge of the laws that govern youth at the work site. Only students enrolled in DILHR-approved youth apprenticeship programs receive a State Certificate of Occupational Proficiency.

Because of state child labor laws, students under the age of 18 could not work in a manufacturing setting. So instead of the work-based learning, teachers such as John Schrum at **L.P. Goodrich High School in Fond du Lac, Wis.**, taught a two-hour, two credit course at the high school.

"We have had a semester of manufacturing, which is part of the technology component, and we have had machine tool processes, which is our second course, plus the two-credit capstone course which has been machine tool technology," he says.

Now Schrum's program is one of four pilot youth apprenticeship programs which fall under the STWOA. The new apprenticeships combine classroom instruction with work-based learning to provide students with solid academic skills and com-

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petencies in a chosen occupational cluster. Students who complete the program will be prepared to pursue their chosen careers and enter the work force directly after high school, continue on to a technical college, apply for registered apprenticeship or enroll in a four-year university.

Programs are administered through the Wisconsin Department of Industry, Labor and Human Relations (DILHR) in cooperation with the Wisconsin Department of Public Instruction and the Wisconsin Technical College System (WTCS).

For John Schrum, who's been with the tech-ed department at Goodrich for 27 years, the shift means a youth apprenticeship program that will finally put students on site with industry. The pilot is called youth apprenticeship, but if categorized using traditional education definitions, it's really a tech-ed teacher involved in a program that resembles tech-prep, vocational education and youth apprenticeship combined. Nonetheless, it meets the guidelines of the STWOA.

"We need to work in partnership with people in industry," Schrum says. "We need to find out what they are doing and what we should be teaching in our programs."

The partnership with industry has meant standardized curriculum.

"Now I'm responsible to local industry. If curriculum needs to change to meet industry needs, it's up to us (educators)," he explains. "With tech-prep, programs are instructor driven. There is no standard curriculum. You teach them what you think is important or what is demanded. Under youth apprenticeship, we are getting organization and standards. If a kid comes out of Racine, or Milwaukee, or Fond du Lac and they have done a youth apprenticeship in manufacturing, we know what to expect.

"My role is training, and this will be the first time in the state of Wisconsin that machining will have a unified curriculum available statewide," he says. "We will be able to get students out on the work site. Students in their junior year will take in-school training, and then from 12 to 3:30 p.m. they will be on the job site, just as regular apprentices. They will be working with a mentor in industry. In the summer between their junior and senior year, they will be full-time with that company. Their senior year, they will continue with that training program the same number of hours per week on site."

For Schrum, the STWOA changes have generated more community support, more than he's had with tech-prep because apprenticeship training forces him into the community. But the responsibility is shared with local industry, education and labor.

"Most of the people have been very supportive. Most of the students involved have parents who work for the industries. I haven't had the time to work with labor on the curriculum yet, but a local technical college is studying the requirements of job entry into manufacturing and working out a transferable credit program."

Articulation agreements are in the works, and the new program has forced new networking.

"We want to bring the high schools and technical colleges together," he says. "We want to improve instruction for the students. They'll be able learn what the real work force is like and earn some money, and we'll be able to see where their training is deficient. I'll be accountable for the competencies, but I'll have to work with industry."

Besides trade competencies, the program involves applied academics like principles of technology, and curriculum designers are working on a chemistry of materials course.

"You could say we're revamping the whole thing, but we're doing it in stages. We have our math people working on an updated program. We

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"I think once we get the program going and have positive results, more students will see the overall value of their education and why they need to take courses like math."

are looking at the tech prep track and the postsecondary track. A student coming through my youth apprenticeship class should be able to enter a four-year university, or graduate with a youth apprenticeship certificate, or go to the technical college, or possibly be employed in the field immediately. We want the students to have these options."

Schrum admits, this program change has been a lot of work but it hasn't bothered him. However, keeping up with trends and finding the right equipment for training has been a challenge.

"I think once we get the program going and have positive results, more students will see the overall value of their education and why they need to take courses like math," he says.

Work-based training is essential, but Schrum doesn't want students to lose experience of being students, so he schedules their work site training so they're back to the school before the day ends.

"I want them back at the school by 4 p.m. so they have school activities available to them. Sometimes programs are set up so the kids never have a chance to come back and participate in sports, chess club, VICA or other activities."

Schrum says VICA affords the class an opportunity for teamwork and visibility. The machining classes at Fond du Lac have no windows, so there's no opportunity for anyone to see what the students are doing. Local competitions have provided visibility and support, and community service activities do the same. And involvement at this level has helped him get his students to participate in VICA leadership activities, too.

Oklahoma

"School-to-Work transition was not even a glimmer in the eye of our state department when the Craftsmanship 2000 program was designed," says Sheila Hellen, campus director at the **South East Campus of the Tulsa Technology Center in Tulsa, Okla.**

"Industry was the driving force. They created the whole thing. It was not being talked about nationally. It was something that was industry driven, industry sponsored, and industry coordinated. The other groups came along afterwards," Hellen explains.

Up and running for three years, the Craftsmanship 2000 (C-2000) machining program has become a model for school-to-work programs nationwide that are now receiving implementation grant money under the School-to-Work Opportunities Act. Industry approached the school through the Metropolitan Tulsa Chamber of Commerce and an umbrella organization, Career Partners Inc. Initiating the program were Hilti, an international fastener company based in Liechtenstein, and several other Tulsa-based companies including American Airlines and Whirlpool. Career Partners Inc. is the actual employer and takes care of details like workers compensation.

"Industry wanted a more qualified, more skilled work force, and they knew they had to start with the schools to get that. They (Hilti) were having to send some of their more involved technical work overseas to get people to do it and do it well, because the work force power was not here at this location."

C-2000 is called an apprenticeship training program, yet it resembles tech prep because it incorporates applied learning in math, physics, communications and computer literacy, and features articulation agreements with Tulsa Junior College. In addition, it involves the extensive work-based learning components of apprenticeship training. Students in the program are also heavily involved in the *VICA Professional Development Program*, a vocational student organization curriculum featuring school-to-work con-

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"A lot of kids spend a lot of time running around trying to figure out what they're going to do. This program gives them a direct avenue."

necting activities and SCANS (Secretary's Commission on Achieving Necessary Skills) competencies. And, the formal partnership established through Career Partners Inc., makes it a good model for programs getting started.

Depending on the student's situation, C-2000 requires a three-to four-year commitment. Students make the commitment their sophomore year then spend their junior and senior years on the Tulsa Technology Center South East Campus, working in industry during their summer breaks. On the job, they work with mentors and are monitored by their instructors. They graduate from their home high schools in their senior years, then return to the Tulsa Technology Center and enroll in the computer numerically controlled machining program. They're also enrolled in classes at Tulsa Junior College for six to nine hours for two semesters. Then, in what's usually the fourth year of the program, they attend the community college taking advanced level courses while working. To date, the first group of students enrolled in C-2000 are now in the third year of the program. Industry employers seems pleased.

"It takes a very mature student to make the commitment to go to school eight hours a day, five days a week for four years," says Hellen. "Students have to be pretty focused to enroll in the program and pursue it from beginning to end. So far, industry is pleased with the level of students being developed by the program. At this point these students are developing some real skills that are very beneficial to the employer. If their Craftsmanship assignments are complete, some industries have assigned them to work on actual company projects."

Program success looks good at this point, but the road to change has been painstaking. It's taken countless hours from all parties to get this program set up.

"I think any time that someone from the outside comes in and says, 'I think there's a better way for you to do your work,' there's a little bit of sensitiveness. It's very different from anything we've ever done before. Most of what we do in education is education driven. This is industry driven. What has evolved has is an excellent communication process between industry, education and the Chamber of Commerce. It's evolved to such an extent that the industry folks are here on a regular basis, walking through our halls. It's a very friendly sort of thing," says Hellen.

Herb Stauffer, the machine shop instructor has been teaching for nearly eight years and has been with the C-2000 program since its inception. When he was first approached by the people organizing the program, he was elated but wary of what it was going to take to get the program running.

"The commitment has been good. That's eased my concerns. The cooperation between industry and the parties involved has been good."

That type of cooperation was critical in the curriculum design. Stauffer uses a package that incorporates industry's training materials with his own. He also worked with the academic teachers to make sure all components fit. To better understand what the students are learning, the academic teachers tour the plants.

Besides faculty needing exposure to industry, the industry mentors have required exposure to education.

"The mentors really are placed in a teaching situation," says Hellen. "The students are not there to produce for the company. This is not a source of cheap labor. The mentors needed training in the characteristics of adolescents as far as how they learn and behave. Employees are a very different group of people to work with than high school juniors, seniors and

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"What we have to remember is that what we're attempting to do is develop a totally different way of delivering education to our nation"

recent graduates. The mentors have to make sure the students have the information they need and the skills they need to complete their assignments."

Stauffer worked in industry for 30 years before he started teaching and knows where entry level employees are lacking skills. That experience plus the state-of-the-art equipment at the school earned Tulsa Technology Center the opportunity to pilot this program.

It's been a lot of extra work for Stauffer, but he had a hunch it would work, so he stuck with it.

"A lot of kids spend a lot of time running around trying to figure out what they're going to do. This program gives them a direct avenue," says Stauffer. "Sometimes, the students are the biggest obstacle to this program. They do not see the potential until they get through the first year. But, they do well once they know what's expected of them and they realize their potential."

Stauffer teaches a traditional vocational training program in the morning and the C-2000 program in the afternoon.

"Students do better in the C-2000 program because they're out in industry. They get their hands on it," says Stauffer. "They experience what's really happening in the work world."

With the students actually visiting the work sites, teaching the employability skills hasn't been difficult. Nancy Kirchner, a reading specialist with the Technical Center's Education Enhancement Center (EEC) is the all-school VICA advisor. C-2000 is set up so that the students are at the EEC twice a week. And during that time, she works with them on the *VICA Professional Development Program (PDP).*

"The program (PDP) has job-teaching skills, communications skills, [and] written skills, and because of the rewards system, the students get excited," says Kirchner. "So much of what they get is applicable to what they need on the job. They not only need the hands-on skills, they need to be able to work as team players. They need good communications skills. PDP has all of this and business and industry have been very supportive of students leaving work for VICA activities.

"We require that every Craftsmanship 2000 student be involved in a VICA contest at least at the district level," says Kirchner. "In fact, the year before last, the first year C-2000 students went to nationals and competed in the VICA Knowledge Bowl.

"Industry wants students with communication skills and teamwork and a sense of responsibility. Students get this through VSOs. I've had a lot of students say they were glad they were in VSOs. VSOs give them the confidence and a sense of responsibility to help them overcome their fears. And we all know fear is a great inhibitor," explains Kirchner.

For the partners in the program, especially Hellen, C-2000 has meant a phenomenal investment of time.

"What we have to remember is that what we're attempting to do is develop a totally different way of delivering education to our nation," Hellen explains. "You have to temper your frustrations of investing so much of your time in one program with the idea that you're creating something new and innovative. And, it's like a three-legged stool (industry, education and VSOs). It takes all three legs to support the stool. You take one of the legs away and you're not very balanced.

"I think we also need to remember that there is no formula for how school-to-work transition programs need to be developed. If whomever's giving the grants says you need to follow our formula for how you put together school-to-work, it won't work."